

6. (Amended) A method according to claim 1 wherein the average water droplet velocity at the centre of the spray at 1m from the nozzle opening is not more than 35m/s.

B2
7. (Amended) A method according to claim 1 wherein the average water droplet velocity at the centre of the spray at 1m from the nozzle opening is not less than 15m/s.

B3
9. (Amended) A method according to claim 1 wherein the volumetric ratio of the gas flow to the water stream is at least 100.

REMARKS

The claims in the application remain as claims 1-18. No new claim fee is required. Claims 13-17 are withdrawn from further consideration under 37 CFR 1.142(b) as being directed to a nonelected invention.

THE REJECTION UNDER 35 USC 112

Claims 4, 6, 7 and 9 were rejected under 35 USC 112, second paragraph, as being indefinite in the citation of broad ranges and preferred included ranges within the same claim. The claims have been re-written to delete the narrow, included ranges and it is believed this ground of rejection is overcome. Deletion of the preferred ranges or limitations in these claims is being done solely to comply with the formalities of 35 USC 112.

THE REJECTION UNDER 35 USC 103

Claims 1-12 and 18 were rejected under 35 USC 103(a) as being unpatentable over Utter et al. (6,126,961).

The '961 patent is directed to a method and apparatus for using a fine mist spray to cool an area, and even a single person, by evaporative cooling. There is described a fan propelled misting apparatus for providing a high velocity of air and a finely divided mist for evaporative cooling of wide areas.

In contrast to the reference, the present invention is directed to a method of generating a water spray by entraining the spray from a nozzle in an air stream such that the diameter of the water droplets 1m from the nozzle opening is from 0.5 to 2 mm. These rather large water droplets can be propelled a significant distance and are particularly suitable for cleaning purposes due to their rather large size and considerable momentum produced by the gas stream rather than increasing the water pressure feeding the nozzle. Thus, the use of high pressure in the water nozzle which had been previously thought necessary to enhance cleaning power can be avoided. The use of the gas stream not only entrains the water droplets and propels them towards the surface being cleaned, but also controls the formation of the droplets and reduces the tendency of the surrounding air to atomize the droplets, as is the case when a high pressure water stream emerges from a nozzle into the ambient air. The cleaning stream can be effective at various ranges such as 1 to 4 meters from the spray nozzle.

Thus, the '961 patent is directed toward cooling the face of a human being with a very fine mist of water accompanied by an air stream to enhance the cooling effect. This reference does not address the objective of propelling large drops of water at sufficient velocities for cleaning purposes without increasing the pressure of the water source. The water drops of the present invention as set forth in claim 1 are in the range of 0.5mm to 2mm which is from 2 or 3 times to as much as 100 times the size of mist droplets as used in '961. Moreover, '961 teaches away from using large drops of water having high momentum as desired in the present invention because the mist in the '961 patent is intended to be directed at the faces of people at close range and the cleaning stream of the present invention would clearly not be suitable for such purpose.

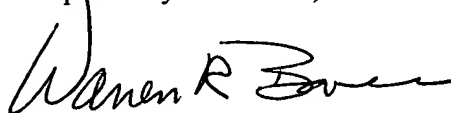
The Examiner notes that it would have been obvious to one of ordinary skill in the art to have used conventional nozzles with various fan speeds in the device of '961 for desired spray parameters and characteristics dependent on application. Applicant disagrees that '961 would have rendered the present invention obvious to one skilled in the art. Again, the '961 patent is directed to evaporative cooling. One skilled in that art armed with the teachings of '961 would only be led to use atomizing spray heads (col. 4, lines 6 and 7) that provide a finely divided, atomized water vapor mist for the intended purpose. There would be no reason to use other types of spray heads that would emit

larger droplets which are less effective for cooling. This would render the '961 device ineffective for its intended purpose of cooling people. The only suggestion of using large water drops propelled by a parallel gas flow to achieve enhanced cleaning is found in the present application. It is a fundamental to 35 USC 103 that the Examiner cannot use applicants' own disclosure to show obviousness. If the Examiner has independent knowledge that is being relied on to reject the claims, the Examiner is required to present such knowledge in the form of an affidavit as required by 37 CFR 1.104(d)(2) so that applicants can be apprised of the basis for the rejection and can fairly judge the propriety of proceeding with the prosecution of the application.

Attached hereto is a marked up version of the changes made to the claims by the current amendment. The attached pages are captioned **"Version with Markings to Show Changes Made"**.

It is believed that up on reconsideration all of the claims will be seen to be in compliance with 35 USC 112 and neither anticipated by nor unpatentable over the cited references taken alone or in any combination. Early and favorable consideration is respectfully requested.

Respectfully submitted,



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“VERSION WITH MARKINGS TO SHOW CHANGES MADE”

IN THE CLAIMS:

4. (Amended) A method according to claim 3 wherein said velocity ratio is in the range of 0.75 to 1.5[, preferably 0.8 to 1.2].

6. (Amended) A method according to claim 1 wherein the average water droplet velocity at the centre of the spray at 1m from the nozzle opening is not more than 35m/s[, preferably not more than 30m/s].

7. (Amended) A method according to claim 1 wherein the average water droplet velocity at the centre of the spray at 1m from the nozzle opening is not less than 15m/s[, preferably not less than 20m/s].

9. (Amended) A method according to claim 1 wherein the volumetric ratio of the gas flow to the water stream is at least 100[, preferably at least 200].